

The secondary reference to Billmeyer, Jr., however, was said to teach shear thinning to reduce a polymer's viscosity. The Examiner's position was summarized on page 4 as, "It would have been obvious to one of ordinary skill in the art that the polymer composition applied by the method and apparatus of Caldwell et al., would inherently undergo shear thinning with a substantial decrease in viscosity motivated by the fact that Billmeyer, Jr. discloses that most polymers undergo shear thinning with increasing shear rate."

Applicant respectfully maintains that the present invention would not have been obvious in light of the above references and requests reconsideration in view of the changes made above and the remarks presented herein. First, nothing in the cited references, taken individually or in combination, teaches or suggests an apparatus as claimed, providing means for shear thinning a polymer composition to reduce its viscosity and selectively place it into a web *to encapsulate at least some of the structural elements, leaving most of the interstitial spaces open* [emphasis added].

Caldwell teaches that "any machine that will spread the coating medium and cause a partial penetration of the fabric is suitable." Col. 11, lines 33-35. Caldwell also teaches that "the elastomer is applied to the fabric in a suitable solvent." Col. 12, lines 7-8 and also col. 9, lines 49-71. These teachings combined suggest that Caldwell is employing a saturation technique whereby control of polymer placement lies less with the apparatus than with the solvent applied in the swellable elastomer. Moreover, there is no teaching that the placement of elastomer in Caldwell will encapsulate structural elements.

The Caldwell patent not only fails to indicate means for shear thinning or the use of shear thinned polymers, but it also appears that the polymer does not substantially encapsulate structural elements of the web, as presently claimed. Nothing in the Billmeyer, Jr. reference cures this deficiency, nor is any reason or motivation presented to explain why one skilled in the art would combine the teachings of the two references.

The Billmeyer, Jr. reference relates to the rheological and mechanical properties of polymers and describes at least three rheological flow conditions: Newtonian, shear-thinning, and shear thickening. Billmeyer does not relate to textile equipment or address suitable apparatus means for treating webs. There is nothing in Billmeyer, Jr. to suggest combining general polymer rheology aspects to the art of treating textiles or that among the three types of

rheological flow conditions, shear thinning should be the preferred method for applying a polymer to a web. One of ordinary skill in the art would not have deduced from the Billmeyer, Jr. reference that shear thinning, as opposed to shear thickening or Newtonian flow, is the preferred method to employ when treating a textile fabric with a polymer composition. Moreover, Billmeyer, Jr. does not identify textile equipment or any suitable textile apparatus. Further, nothing in Billmeyer, Jr. or Caldwell suggests that shear thinning should be used to encapsulate structural elements while leaving most of the interstitial spaces open, as claimed.

Further, with reference to claims 167-172, in light of the arguments presented above, the additional rejection of such claims is rendered moot since such claims depend from independent claim 1 and other dependent claims.

(2)

The Examiner has rejected Claims 142, 145, 155-159 and 187 under 35 U.S.C. § 103(a) as being unpatentable over the references as combined in section (1) above, in further view of Linscott (U.S. Pat. No. 2117432).

The Examiner admitted that the references combined above do not disclose that the apparatus utilizes two or more blades spaced apart from one another that are utilized in the placement of the polymer into the porous web. The Examiner relied on Linscott to cure this deficiency. The Examiner's position was summarized on page 4 as, "Therefore, it would have been obvious to one of ordinary skill in the art to supply the method and apparatus taught by the references as combined in section (1), above, with two or more blades spaced apart from one another motivated by the fact that Linscott teaches that such a method and apparatus results in distribution and removal of excess composition as desired by a suitable arrangement of wiper and scraper knives frictionally engaging the upper and lower faces of the sheet material (page 1, column 2, lines 25-28)."

In light of the changes made herein and the arguments presented above, this rejection is rendered moot since all of the rejected claims depend from the independent claims addressed above. Nevertheless, Applicant addresses the Linscott patent, as a whole, in light of the Examiner's citation of such. Applicant respectfully maintains that it would not have been obvious to one of ordinary skill in the art to supply the method and apparatus taught by the references as combined in section (1), above, with the teachings of Linscott. As a whole, the

Linscott patent teaches a process for completely impregnating a fabric with fluid rubber, the fluid rubber composition being pressed against the surface and then flowing into the fabric to coat the top and bottom of the fabric and fill the interstices. Linscott's recitation of blades is not in conjunction with shear thinning or encapsulation. No mention of such terms is contained in the teachings of Linscott. Linscott fails to teach an apparatus as claimed, providing means for shear thinning a polymer composition to reduce its viscosity and selectively place it into a web to encapsulate at least some of the structural elements, leaving most of the interstitial spaces open.

(3)

The Examiner has rejected Claims 175-178 under 35 U.S.C. § 103(a) as being unpatentable over the references as combined in section (2) above, in further view of Marteness (U.S. Pat. No. 4292110).

The Examiner admitted that the references combined above do not disclose that the blades may be vibrated during coating. The Examiner relied on Marteness to cure this deficiency. The Examiner's position was summarized on page 5 as, "However, it would have been obvious to one of ordinary skill in the art to vibrate the coating knives or blades during coating motivated by the fact that Marteness, in his method and apparatus for the placement of a polymer composition into a porous web, teaches that a more uniform coating is obtained if the coating knife is vibrated (column 3, lines 48-49)."

In light of the changes made herein and the arguments presented above, this rejection is rendered moot since all of the claims rejected depend from the independent claims addressed above. Nevertheless, Applicant addresses the Marteness patent, as a whole, in light of the Examiner's citation of such. Applicant respectfully maintains that it would not have been obvious to one of ordinary skill in the art to supply the method and apparatus taught by the references as combined in section (2), above, with the teachings of Marteness. As a whole, the Marteness patent teaches a fabric-reinforced adhesive bonding sheet, the adhesive of which is a blend of epoxy resin and a dianiline which soften and melt at 50°-110° C. The bonding sheet is especially useful for making insulated rail joints. Marteness' recitation of vibrating blades is not in conjunction with shear thinning or encapsulation. No mention of such terms is contained in the teachings of Marteness. Marteness fails to teach an apparatus as claimed, providing means for shear thinning a polymer composition to reduce its viscosity and selectively place it into a

web to encapsulate at least some of the structural elements, leaving most of the interstitial spaces open. Nothing in Marteness would suggest, nor is any reason or motivation presented to explain why, one skilled in the art would combine the teachings of Marteness with the references described in section (2) above.

Moreover, the Examiner refers to the blades of Applicant's invention as "coating" blades. Applicant has distinguished its teachings from coatings and has described specific features of its blades in the present application. See, p.1, line 22 through p.2, line 25 and p.13, line 24 through p.14, line 3. Applicant maintains that the references cited above, alone or in combination, fail to teach shear thinning, encapsulation and leaving spaces open.

(4)

The Examiner has rejected Claims 141, 166, 173-174, 184 and 186 under 35 U.S.C. § 103(a) as being unpatentable over the references as combined in section (2) above.

The Examiner admitted that the references combined above do not disclose that the web is transversely tensioned during coating and curing or that the resonance of the coating blades is dampened or that the blades have a specific finish or are heated during application. The Examiner's position was that such features would have been obvious to one of ordinary skill in the art, in light of the references described in section (2) above.

In light of the changes made herein and the arguments presented above, this rejection is rendered moot since all of the claims rejected depend from the independent claims addressed above. Any discussion related to tension, curing, blade resonance, blade finish or blade temperature, if mentioned at all, is not in relation to shear thinning a polymer composition to achieve encapsulation. Applicant maintains that the references above, alone or in combination, fail to teach an apparatus as claimed, providing means for shear thinning a polymer composition to reduce its viscosity and selectively place it into a web to encapsulate at least some of the structural elements, leaving most of the interstitial spaces open. In essence, the references cited above, alone or in combination, fail to teach shear thinning, encapsulation and leaving spaces open.

Applicant appreciates the effort that went into the detailed office action prepared by Examiner Jerry Lorengo but respectfully disagrees with the Examiner's position. To the extent this rejection may be based on personal knowledge of the Examiner, Applicant respectfully requests that the Examiner provides a supporting declaration as provided for by 37 C.F.R. § 1.107 or withdraw the rejection. In view of the above amendments and remarks, Applicant respectfully requests that the Examiner reconsider and withdraw this rejection.

Applicant believes that it has satisfactorily responded to the issues noted in the Office Action, and that the claims are in condition for allowance. Approval of the application for allowance is therefore solicited. If the Examiner is of the opinion that a telephone interview would expedite the prosecution of this application, the Examiner is invited to call Applicant's attorney at the number listed below.

Respectfully submitted,

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